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If dunes exist, trace formation from incipency to maturity and decay. Source of material. Trace story of plant life on dune (see outline on field work). Cultural value of wind-made surfaces.

6. *Glaciers*.—Part glaciers have played, or are playing, in the region under consideration. What are the evidences that glaciers have affected the region?

Topographic evidences: Part played by glaciers in forming the hills, depressions, lakes, swamps of the region. How accomplished? Are the lakes and ponds of the region increasing or decreasing in size? Cause? Fresh or salt? Why?

Soil evidences of glacial origin: Material, source? Arrangement? Depth? Was glaciation of value or a detriment to the region from the cultural and scenic standpoint? How would the region probably appear had the country not been glaciated?

REFERENCES: Salisbury, *Journal of Geology*, Vols. I and IV; Davis and Shaler, *Glaciers*; Davis, *Physical Geography*; Scott, *Introduction to Geology*; Chamberlin, *Terminal Moraine*, Third U. S. Geological Survey; Russell, *Glaciers of North America*; Geikie, *Earth Sculpture*.

7. *Soil*.—Nature of the soil and subsoil in the region—loamy, clayey, sandy, gravelly? Depth of soil? Make drawing showing same in river or railroad cuts. Give well data. Is the soil residual or transported? Describe manner of accumulation. Describe country rock. To what natural plants is the soil best adapted? To what agricultural plants? (See outline on field work.)

REFERENCE: King, *Soil*.

8. *Underground water*.—Evidences of effect of underground water on the topography in region considered. Sink holes in limestone regions. Formation? Caves—how formed? destroyed? Evidences of circulation of underground water shown in country rock. Depth at which constant underground water is found. Well data. Depth of constant rivers.

During the quarter each student in Course B will be expected to work out plans for the teaching of certain regions selected in this vicinity.

## OUTLINE OF HISTORY FOR THE ELEMENTARY SCHOOL.

EMILY J. RICE.

THE school is an organization for work. It is a place where the activities of the home and society should be carried on in such a way that the children may take part in them, a place for the gaining of social experience. Under the old school system,

the child feels no necessity for the knowledge gained, and therefore studies without any motive of his own. It is the teacher who furnishes the motive for his effort. The child makes no immediate use of what he learns, and hence it fails to strengthen his power. The school is external, isolated from life. In the outside world, what we do makes a demand for us to know, and it is apparent that doing is the essential basis of knowing. We should organize the school so that the children have work to do and gain knowledge through the requirements of that work.

Fortunately, the occupations which are a necessity for our daily living are being recognized as a means of education. Cooking, sewing, and manual training may be introduced, at present, as extra studies, but there is a growing recognition of their place. These occupations give abundant opportunity for the children to be useful to the school community and to feel the value of social service. They make a demand for a knowledge of the work of the world, past and present, and so furnish a basis for the selection of subject-matter in geography, science, and history. Through the use of the child's own activities he becomes able to interpret the social and industrial life of his environment. The environment is molding the child's life in a powerful way, and the school should act in close relation with it. As long as there is a divorce between the head work and the hand work of the school, we shall have overcrowded courses of study, and our pupils will be unable to carry their thoughts into effective action. When the children are engaged in social work and gain knowledge according to the needs of social work, thought and action go hand in hand.

The first great mission of the school is to give the child something to do, and the second is to fill that work with meaning by showing its relation to the larger movements of life. It is more important that the history lessons in the elementary school should have this close connection with the social activities of the school than that any logical order of the subject-matter should be considered. In fact, the kind of work being done suggests both historic subject and order of topics. This is the only history vital to the children. If we compel them to

live in times foreign to their own experiences, history is an isolated and lifeless thing. Related to their activities, it gives significance to all that they do and leads to an interpretation of the industrial and social situation.

As the children's interest in their occupations causes them to inquire what other peoples have done, we should take them to museums and shops to see beautiful things and teach them the conditions under which these things were produced. Such visits are not for the purpose of copying historic objects. It is useful things that we wish them to make and in their own way. Everything made should have social value, a use that the children can see. But while imitation of historic objects is rarely desirable, the children have a right to see the relation of their own efforts to the best that the world has produced.

The arts that will be introduced into the school are cooking, clay-modeling and pottery, gardening, sewing and weaving, bookbinding and printing, wood- and metal-work. Some work will be done in each of these arts in all grades throughout the school.

*Kindergarten.*—The children will reproduce the home life by building and furnishing a play-house and by games which utilize their desire for play. In the furnishing of the play-house, they begin the arts of basketry and weaving, of clay-modeling and pottery, and of wood-work—with original design.

Visits to farms, shops, and buildings being constructed will show the relation of the home to the larger community. The plays of the children will also reproduce some of the social activities of the environment, as the work of the farmer and the blacksmith, and the life of the fireman, the postman, and the newsboy. The young children are unable to trace the growth of any social institution, and we shall confine the work merely to the dramatization of existing conditions.

*First grade.*—All the arts begun in the kindergarten will be carried on in the first grade by the making of a play-house and a doll theater to be used for the dramatization of stories. The children will study the materials that they use in their work, trace these materials from their sources, and learn something of the processes of their manufacture and transportation.

From the social activities of their environment, we shall emphasize especially the occupations of the lakeshore and the railways. The children will visit the harbor to see ships and shipping docks, the life-saving station, and lighthouse. They will draw ships and locomotives, and make play boats and cars.

*Second grade.*—The textile industry will form the basis of the course of study in this grade, not to the exclusion of the other arts, but for the purpose of gaining greater thoroughness in the work than we could have by spending an equal amount of time on all the arts begun in the lower grades. The work will include simple needlework, basketry, spinning, dyeing, making a loom, and weaving; study of the materials used—flax, hemp, wool, cotton, silk—and the process of cloth manufacture by primitive methods; visits to shops, museums, and industrial plants; study of types of shepherd life, as the patriarchs of the East and the Arabs; comparison of shepherd life with that of people who had not learned to domesticate animals—the hunter type—and with the life of the farmer; stories of pioneers. In connection with this work and with cooking, we may consider ranch life in the West, transportation of sheep and cattle to Chicago and sending of products out of Chicago, and making of butter and cheese.

*Third grade.*—In this grade we shall emphasize cooking and the making of pottery to some extent. The children will make, decorate, and glaze pottery, and make and cast in plaster statuettes and bas-reliefs. They will trace the primitive methods of making pottery and make frequent visits to the Greek rooms of the Art Institute. Stories from Greek life may be used to show the conditions which led to the pre-eminence of the Greeks in sculpture.

The dishes made will be used in cooking, and in connection with their cooking the children will study agriculture. They will make a garden, visit a farm at different seasons, and study the work of the farmer throughout the year. They will prepare and serve luncheons, and visit groceries and bakeries. They will study the transportation of wheat from the great wheat regions of the West, the grain-elevator system of Chicago, the manufacture of wheat products in our city, and their transportation to other regions. Stories of great sailors and explorers will also be used.

*Fourth grade.*—The emphasis will be placed in this grade upon wood- and simple metal-work, which will lead to a study of the specialization of industries and concentration in cities, our own city being the best one to use as a type. The children will begin their year's work by making objects useful for the school or for their homes, perhaps looking forward to Christmas presents, and with visits to foundries and workshops. They will trace the history of inventions in tools with something of the social progress involved, to the development of commerce and the building of cities. They may be led to see some of the factors that have aided the growth of Chicago and the ways by which the whole world now contributes to its needs, and may then trace the history of each of these factors, as the changes in modes of transportation and in means of communication—streets, bridges, mail service, telegraph, and telephone—with stories of the early settlers and explorers, and also study some modes of municipal service, as the water-supply, illumination, police, and fire protection, parks, and playgrounds.

*Fifth grade.*—We shall emphasize sewing in this grade, and also the other branches of the textile industry. The children will spin enough to give an understanding of the process and what it costs. They will weave enough to give a thorough knowledge of materials, of good and poor work, and a clear idea of the mechanical processes involved, something of color, something of design. By the study of manufacture, children learn that their comfort depends upon the work of the world in fields and factories. After doing some work themselves, they will be interested in the way it comes about that we have these textile fabrics, so the study of clothing becomes a part of history.

The children's interest in cloth manufacture, and their growing conception of their social relations and of the school organization, seem to give especial value to the study of colonial history here. The following topics are suggested: the New England colonial home and household industries; the farm; the village; geography of the region as a whole; the social life; the school; dramatization of a colonial school; contrast with our own school and with other means of education in our time; dramatization of a town-meeting; comparison of the business of a town-meeting and that of our city council. Similar topics may be used for other colonies, and finally a study made of the revolutionary struggle.

*Sixth grade.*—We shall emphasize the growth of the city in this grade and give some especial attention to the arts of pottery and clay-modeling. The children will make, decorate, and glaze pottery, and make and cast in plaster statuettes and bas-reliefs. The history of the development of pottery and of sculpture, and visits to the Art Institute, will show the great advances that the Greeks made in these arts and suggest the study of the circumstances under which the work was done. A study of Greek history will follow, and, finally, a study of the public buildings of Chicago and of the movements under consideration here in the direction of civic beauty.

*Seventh grade.*—The growth of the home will be emphasized in the seventh grade, and among the arts that will receive especial attention are bookbinding and printing. The children will do practical work and study the history of these arts. The art of making books, both in manuscript and printing, having been at its height, so far as beauty is concerned, in the Middle Ages, we shall study the conditions of work in that period. The cathedral as a teacher of the people in the days when books were rare, will be illustrated by the story of St. Mark's in Venice. Venice will be taken as a type of the mediæval city, and in connection with its history we shall study mediæval painting, embroidery, and tapestry. This history involves the story of the crusades with their feudal spirit, the breaking down of feudalism, the trade with the East, the search for the Indies, and the discovery of America. Biographies of artists and of artisans of the guild period will furnish a basis for comparison with the lives of workers of the present. We shall also compare the household industries of that period with those of our own time, study household art, and picture an ideal home.

*Eighth grade.*—The special industries of this grade will be wood- and metal-work. The children will build an out-of-door play-house to be used by the entire school for social purposes. In the furnishing of this house all the other grades will share. The eighth grade will also do some work with metals. They will study the architecture of our city and see what advantage we have taken of our topography—in comparison to other cities—a prairie city and the tenement-house problem. This involves some study of the structure and functions of the city government.

Inquiry as to the causes of congestion of population here will lead to a study of the westward movement of our people, foreign immigration, and the specialization of industries. The occupation of different physiographic regions, with the resulting differences in industries, furnishes the underlying conditions for an understanding of our political history. The following topics are suggested: the Appalachian barrier and routes of travel across it; settlement of Kentucky; life in the Northwest Territory; a typical settlement; the city of Washington and the new government; transportation and demand for roads to the East; political separation between the East and the West; the Cumberland road and the Erie canal; the steamboat and the railroad; the wheat industry and the unification of the North; the cotton industry and the unification of the South; political separation between the North and the South; the mining industry; the factory system of labor and its effect upon the worker; our national ideals; an ideal nation.

Those of the pupils who study Latin will trace the development of Roman institutions, with constant comparisons between the Roman democracy and the American. By this means they will gain an additional impression of the value of the principles of liberty and law.

## APPLIED MATHEMATICS.

GEORGE W. MYERS.

PURSUANT to the thought that most elementary and secondary school-teachers of the mathematical subjects will have to do for the most part with students who study mathematics for its uses, the work for the year in mathematics for the professional school will begin with a course in elementary astronomy. Chief emphasis will rest upon the elementary mathematical relations involved in the study of the earth as an astronomical body. Observational data which will be collected during October and November will furnish both a basis and a stimulus for a degree of proficiency in the knowledge and uses of arithmetic, algebra, and geometry. These subjects will be thoroughly restudied during the rest of the year.